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ABSTRACT

This study sought to determine whether insular Puerto Ricans given English language training prior to taking the tests of the Army Classification Battery (ACB) show higher measured potential than those who take the tests before receiving the special English language training. ACB test scores were obtained on two samples of insular Puerto Ricans, one (100 men) tested before a six-week course of English language training and the other (153 men) tested on completion of English language training. No men were tested both before and after language training. Results indicate that the six-week language training program yielded only modest increases in the literacy skills of insular Puerto Ricans and that more definite research would be required to determine the effectiveness of English language training. (Two tables of findings are included.) (JM)

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Research Investigation 72-1

EFFECTS OF ENGLISH LANGUAGE TRAINING ON APTITUDE TEST PERFORMANCE OF INSULAR PUERTO RICANS

U. S. Army
Behavior and Systems Research Laboratory

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FOREWORD

BESRL's DIFFERENTIAL CLASSIFICATION Work Unit applies psychological measurement methods to enable the Army to make best use of the skills and aptitudes of its enlisted personnel through increasingly accurate and differentiated measures of individual potential. Research is conducted to maintain and improve the effectiveness of the Army Classification Battery and related techniques and to assess the impact of conditions that may interact with the classification tests and thus affect the basis for utilization of the enlisted input--changes in training programs and job content and environment, for example.

As part of the total effort, special attention has been given to use of the tests with Insular Puerto Ricans many of whom have little or no command of the English language. The present Research Study examines the probable effect of English language training given prior to the Army Classification Battery in providing scores that are more accurate estimates of the trainability of the Insular Puerto Ricans.

The entire work unit is responsive to special requirements of the Deputy Chief of Staff for Personnel and the U.S. Continental Army Command, as well as to objectives of Army RDT & E Project 20062106A722, Selection and Behavioral Evaluation, FY 1972 Work Program.

J. E. UHLANER, Director
Behavior and Systems
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EFFECTS OF ENGLISH LANGUAGE TRAINING ON APTITUDE TEST PERFORMANCE OF INSULAR PUERTO RICANS

BRIEF

Requirement:

To find whether Insular Puerto Ricans given English language training prior to taking the tests of the Army Classification Battery (ACB) show higher measured potential than those who take the tests before receiving the special English language training.

Procedure:

ACB test scores were obtained on two samples of Insular Puerto Ricans, one tested before a six-week course of English language training (N = 100), the other on completion of English language training (N = 153). No data were available on men tested before and after, nor were test scores obtained at time of entry into service. While there was no reason to believe that the samples were different, comparability could not be established. Means, standard deviations, and ACB test intercorrelations for the two samples were compared.

Findings:

In both samples, mean scores averaged well below the mobilization population mean of 100.

ACB test scores obtained after six weeks of English language training were not substantially different from those obtained on the sample that took the tests prior to the training. While on some tests given following English language training, scores were slightly higher than scores of the other sample, a high proportion of the men still failed to attain qualifying scores of 90 or higher on any aptitude area.

Two clusters of tests, academic and mechanical, emerged from the analysis. The academic cluster was better defined in the sample tested after English language training, indicating that results of testing after English language training are slightly more accurate measures of aptitudes than scores obtained prior to the training.

Utilization of Findings:

While slightly better measures of aptitudes can be obtained after English language training, the improvement in scores, even in the more cognitive tests such as Verbal, has little practical significance. More definitive research would be required to determine the effectiveness of English language training.

EFFECTS OF ENGLISH LANGUAGE TRAINING ON APTITUDE TEST PERFORMANCE OF INSULAR PUERTO RICANS

THE PROBLEM

During periods of inducting young men into military service, many men from the island of Puerto Rico--who are United States citizens--have been accepted into the Army. The native language of most of these men is Spanish rather than English. The mental standards in effect during the late 1960's and early 1970's have been so low that many Insular Puerto Ricans entering the Army have little English literacy. Since these men are required to function in a predominantly English-speaking environment, the Army provides six weeks of English language training for those who are functionally illiterate in English; basic communication skills are taught before the men start their active duty training.

Basic combat training is given in English, Army job (MOS) training is given in English, technical manuals are in English, and job and military supervisors speak English. Hence the classification tests are in English to predict performance in the English-speaking environment.

The Army Classification Battery (ACB) is ordinarily administered to recruits during the first few days of reception processing. The men are then sent for training--basic combat training for most English-speaking men and English language training for about half the Insular Puerto Ricans. The test scores are used to help make decisions about appropriate job training for the men. In the interests of both the men and the Army, the test scores should reflect as accurately as possible the true potential of the men. In the case of the Puerto Ricans who have had the Army English language training, it was considered possible that predicted performance would be higher if the aptitude measures were obtained after the language training than if the classification tests were administered prior to the language training.

PROCEDURE

ACB test scores were obtained for two samples of Puerto Rican men. One sample was tested before beginning English language training (N = 100), the other upon completion of language training (N = 153). No men were tested both before and after. The data were collected locally at Ft. Jackson, South Carolina, for the Deputy Chief of Staff for Personnel, and then submitted to the Behavior and Systems Research Laboratory for analysis. Means, standard deviations, and intercorrelations of the ACB tests were computed for the samples. No test scores obtained at the time of entry into the Army were available; therefore, no statistical procedure could be applied to correct for any preexisting differences between the samples.

RESULTS

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Means and standard deviations of the ACB tests for the two samples are shown in Table 1. Although in general the means for the group tested after six weeks of English language training are higher, they are still severely depressed from the mobilization population mean of 100. Tests with the largest differences between the samples tested before and after English language training were the Army Clerical Speed Test (ACS) and the Classification Inventory (CI). The Verbal Test (VE), which was expected to reflect most strongly the effect of training in the English language, showed only a modest gain of 4.3 points. One of the tests, Electronics Information (ELI), actually showed a small loss, and the General Information Test (GIT) showed only a slight gain; both differences were within one point in the two samples.

Table 1

MEANS AND STANDARD DEVIATIONS OF ACB TESTS
FOR INSULAR PUERTO RICANS

ACB Test	Mean		Standard Deviation	
	N = 100	N = 153	N = 100	N = 153
	Before	After	Before	After
VE	68.7	73.0	12.0	13.7
AR	69.5	71.1	13.5	15.1
PA	83.0	88.3	19.2	19.7
ACS	87.2	104.0	19.9	24.7
GIT	66.8	67.9	9.1	8.6
MA	79.9	86.5	13.8	11.7
ELI	76.0	75.4	17.6	16.6
SM	71.1	79.1	10.8	11.8
AI	77.1	81.2	9.1	8.5
CI	53.6	73.2	14.9	20.8

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The intercorrelations of the ACB tests for the two samples are shown in Table 2. In general, correlation coefficients are slightly higher for the group tested after English language training. In the group tested before the English language training, some of the coefficients are negative and average correlation is lower.

Two clusters of tests, academic and mechanical, are found consistently in the ACB. The academic cluster consists of the Verbal (VE), Arithmetic Reasoning (AR), Pattern Analysis (PA), and General Information (GIT) tests. The mechanical cluster consists of the General Information, Mechanical Aptitude (MA), Electronics Information (ELI), Shop Mechanics (SM), and Automotive Information (AI) tests. The academic cluster was better defined in the sample tested after English language training, a result which indicates that these tests are providing slightly more meaningful measures after literacy training. The mechanical cluster, except for GIT, was about equally well defined in the two samples. In the sample tested before English language training, the GIT was relatively independent of the other ACB tests, whereas in the sample tested after English language training it showed its usual high correlation with both the academic and mechanical tests.

Table 2

INTERCORRELATION OF ARMY CLASSIFICATION BATTERY TESTS FOR INSULAR PUERTO RICANS

	ACB Test									
	VE	AR	PA	ACS	GIT	MA	ELI	SM	AI	CI
VE		45[a]	11	25	17	12	16	06	11	20
AR	40[b]		14	35	23	06	-02	02	02	16
PA	25	28		22	08	07	21	07	06	-13
ACS	35	32	26		09	11	17	27	04	29
GIT	35	28	20	20		17	-01	16	30	24
MA	19	26	10	21	17		19	43	38	42
ELI	25	24	43	24	36	11		30	25	23
SM	28	16	27	14	31	34	33		33	39
AI	12	06	07	13	04	38	24	36		31
CI	29	33	10	13	26	33	28	36	20	

[a] Sample tested before English Language Training above diagonal; N = 100.

[b] Sample tested after English Language Training below diagonal; N = 153.

DISCUSSION

The expectation underlying literacy training is that after training the men will be better prepared to cope with the demands of Army life, and that this ability will be reflected in improved performance. A reasonable corollary is that performance on paper-and-pencil aptitude tests with a high reading requirement is also improved by training in English and basic arithmetic. The results based on a sample of 250 Insular Puerto Ricans do not support the expectation that test scores obtained after six weeks of language training are substantially different from those obtained before such training.

Two tests, the Army Clerical Speed Test and the Classification Inventory, showed large differences, being about one standard deviation higher in the sample with prior English language training. However, the ACS is a nonverbal test and the CI is a noncognitive self description inventory. On most cognitive tests such as the Verbal, modest gains were noted--about one-third a standard deviation for VE--but the gains have little practical significance. Most men, even after English language training, still did not attain qualifying scores of 90 or better on any aptitude area except Clerical (which includes ACS).

The only consistent sign that test scores obtained after English language training provide slightly better measurement of aptitudes is the pattern of slightly higher correlation among the ACB tests and the clearer emergence of the academic cluster of tests.

With current public concern about the usefulness of aptitude tests for minority groups, the questions considered in this research are important. The results obtained on these men indicate that the six-week program of language training yielded only modest increases in the literacy skills of Insular Puerto Ricans. The effects on ACB test scores were of little practical significance. More definitive research would be required to determine the effectiveness of English literacy training.